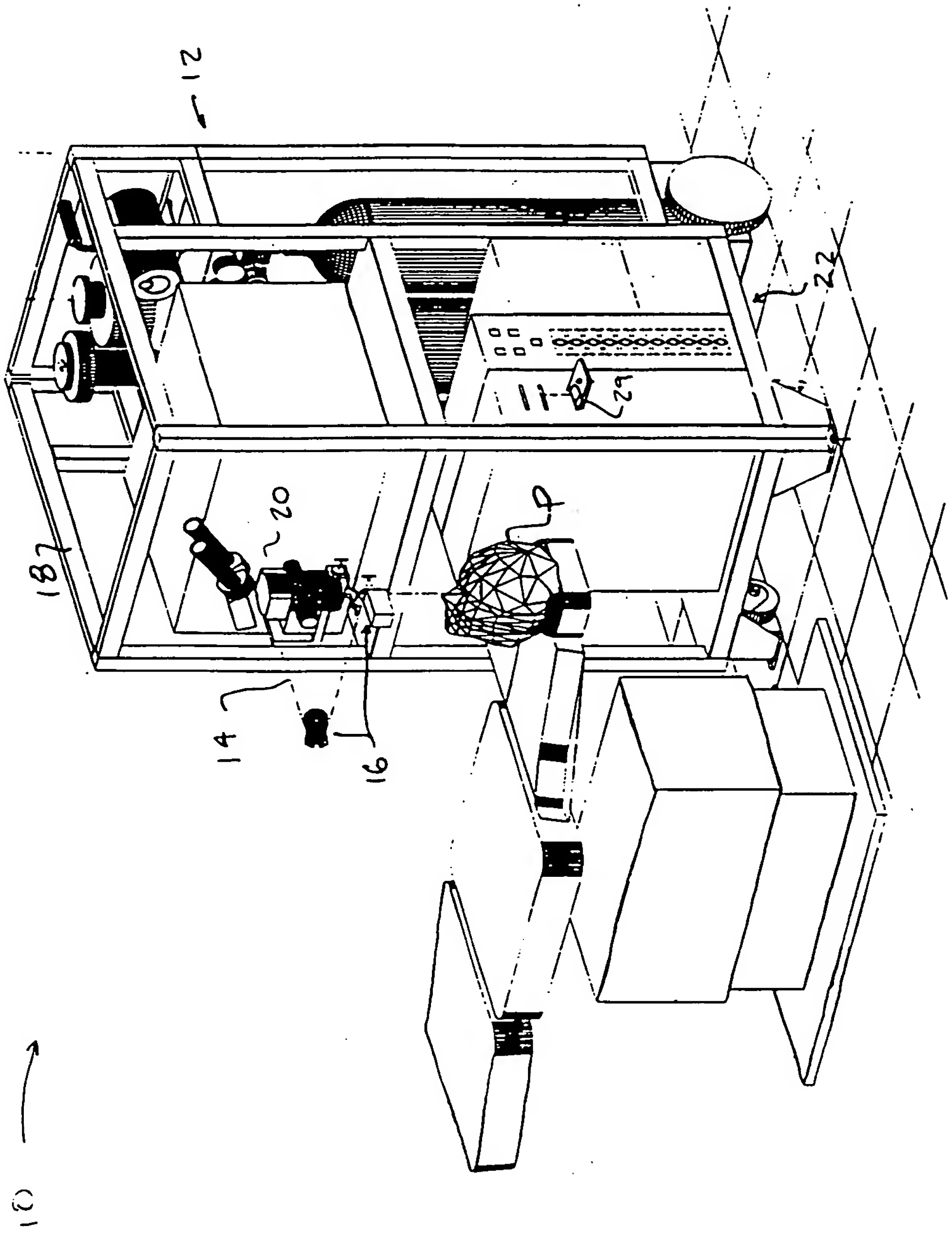


FIG-1

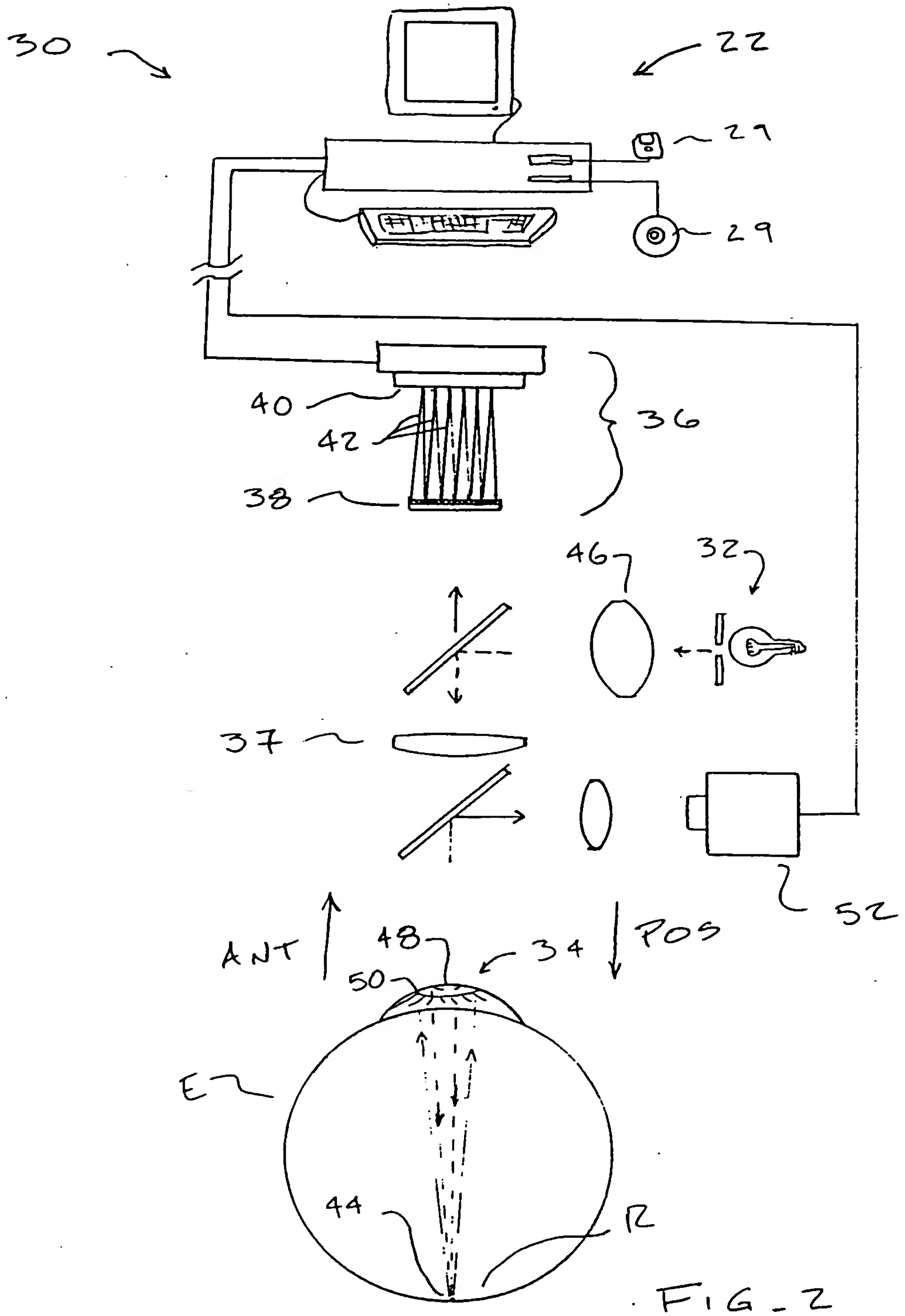


FIG_2

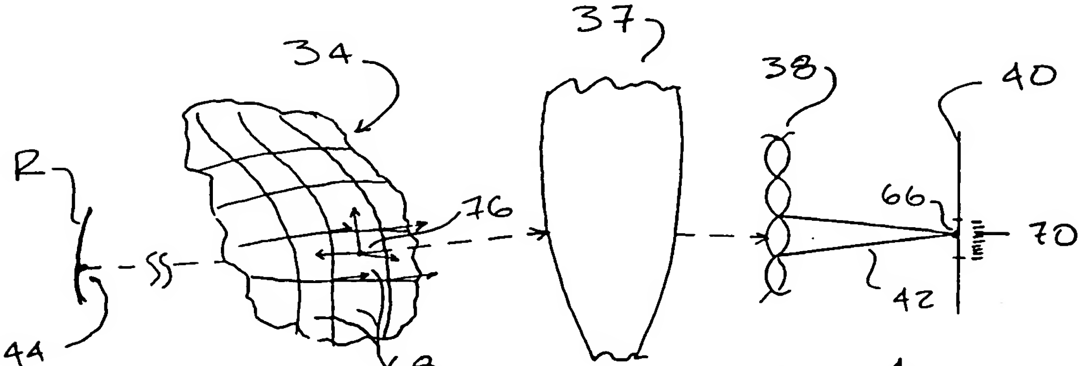


FIG 4

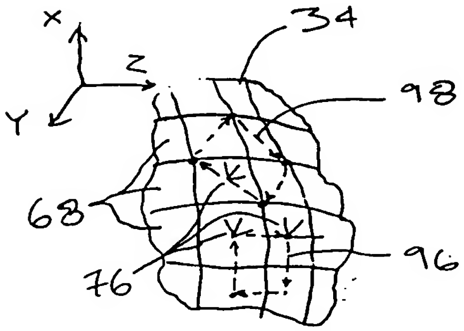


FIG_5

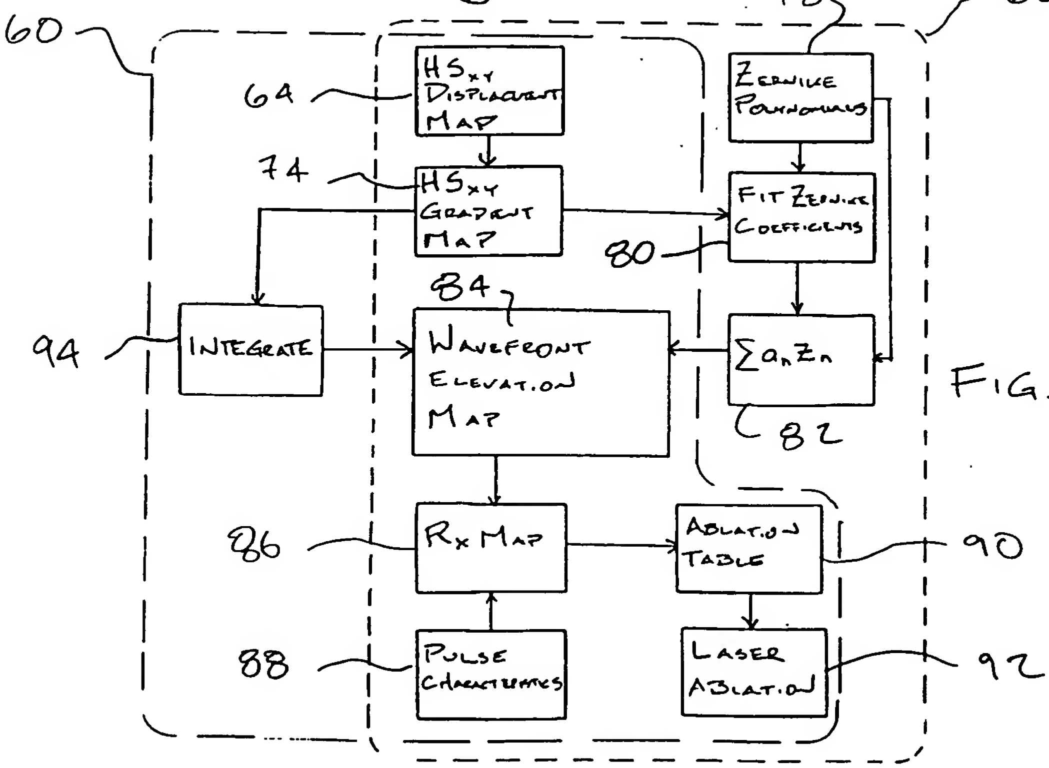


FIG_3

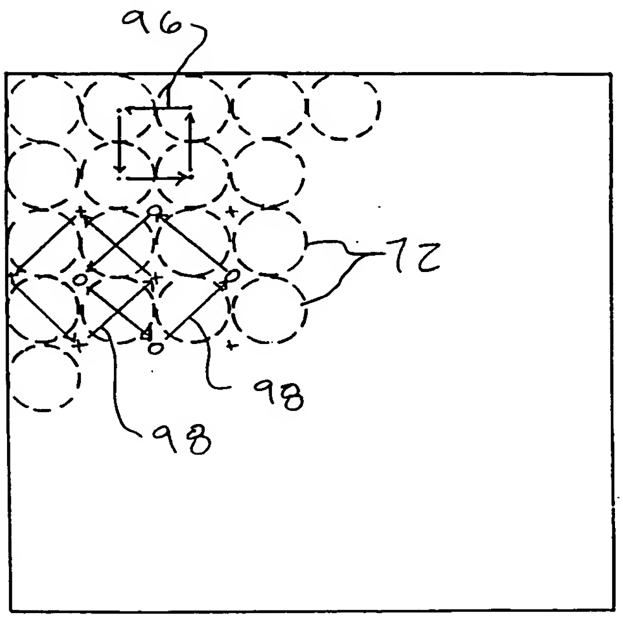


FIG _ 6A

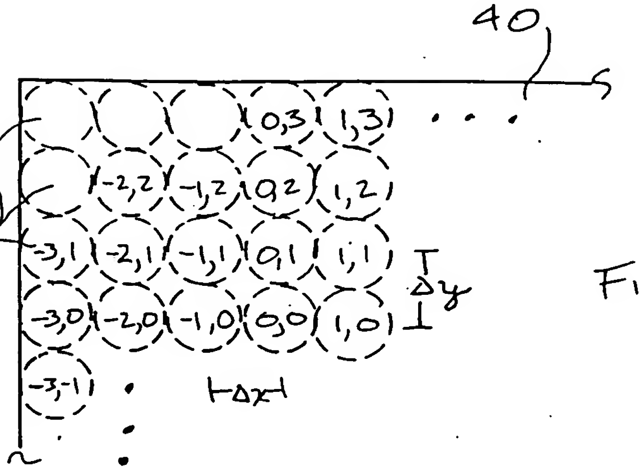


FIG 6

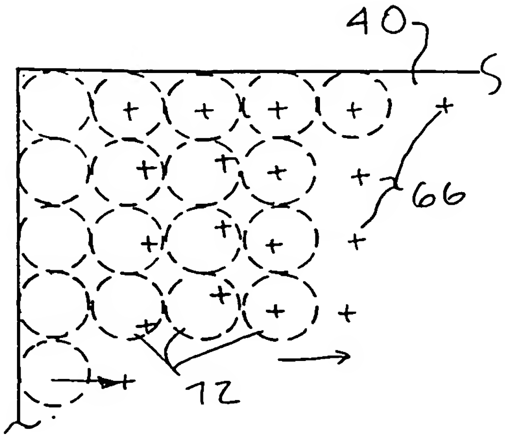


FIG_7A

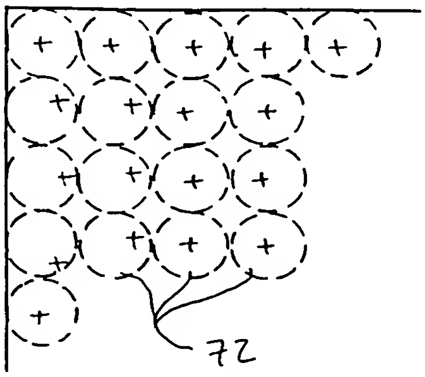


FIG_7B

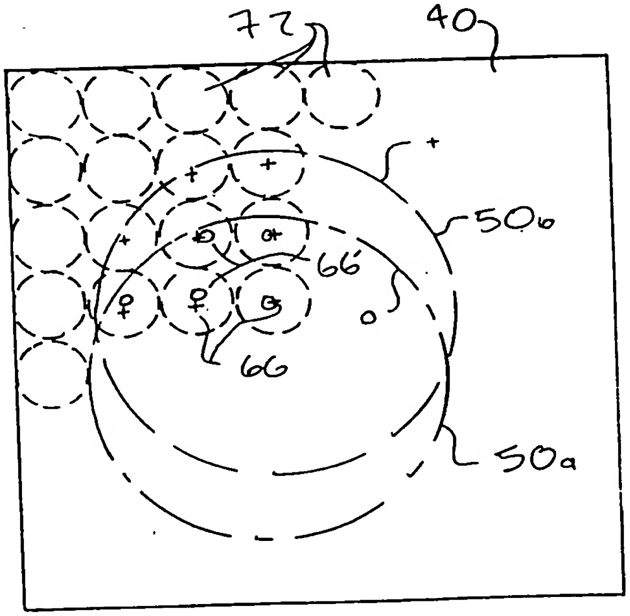


FIG_7C

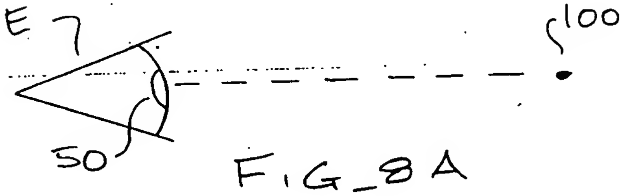


FIG_8A

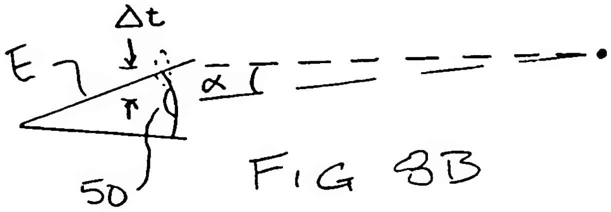


FIG 8B

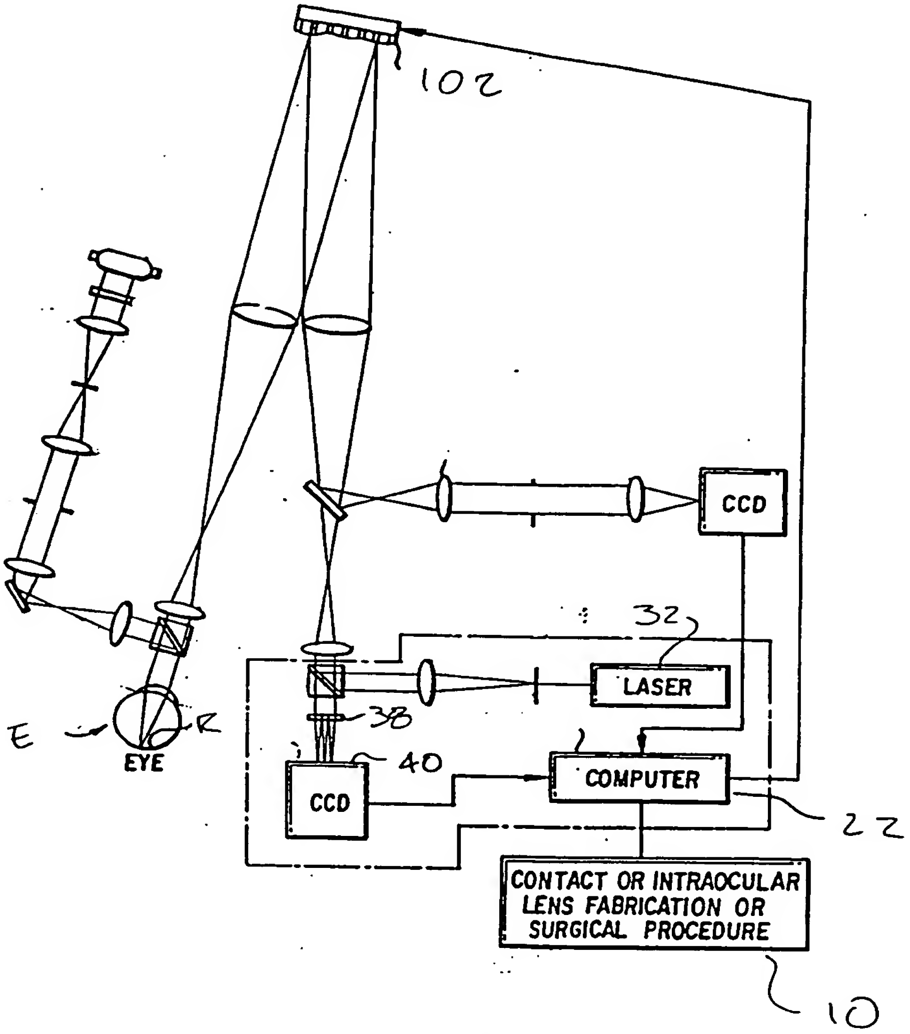

102
CCD
32
LASER
E
R
EYE
38
40
CCD
COMPUTER
22
CONTACT OR INTRAOCULAR LENS FABRICATION OR SURGICAL PROCEDURE
10

FIG - 9

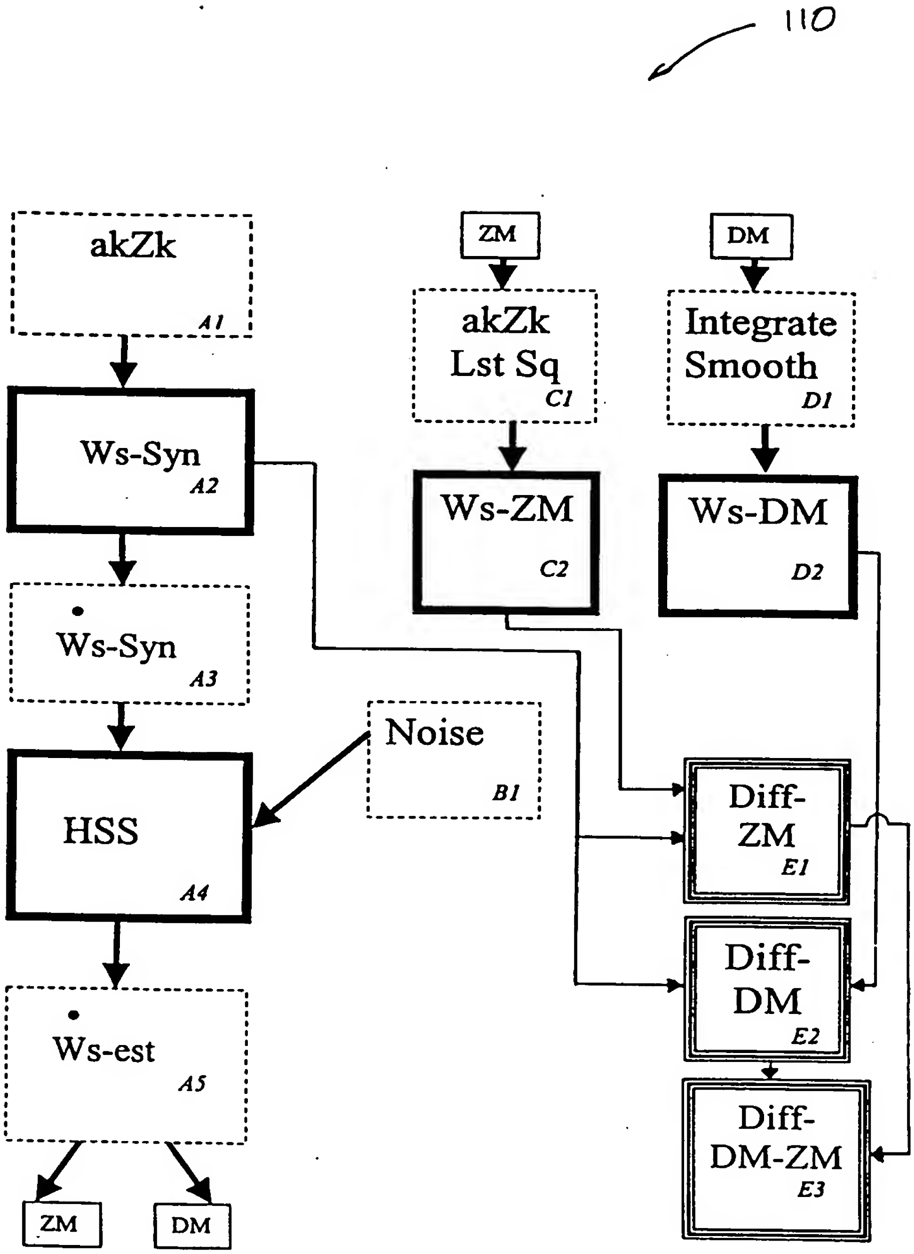

110
akZk
A1
Ws-Syn
A2
Ws-Syn
A3
HSS
A4
Ws-est
A5
ZM
DM
ZM
akZk
Lst Sq
C1
Ws-ZM
C2
DM
Integrate
Smooth
D1
Ws-DM
D2
Noise
B1
Diff-
ZM
E1
Diff-
DM
E2
Diff-
DM-ZM
E3

FIG_10

FIG_11A

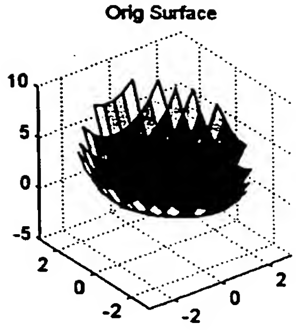


FIG_11B

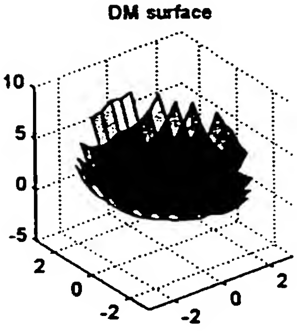
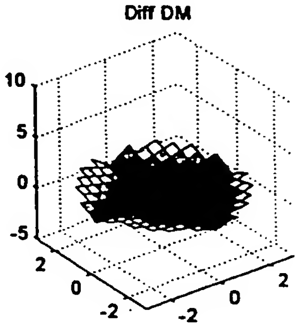


FIG_11C



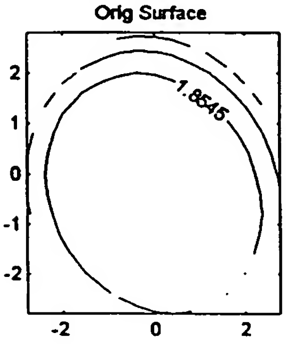


FIG-11D

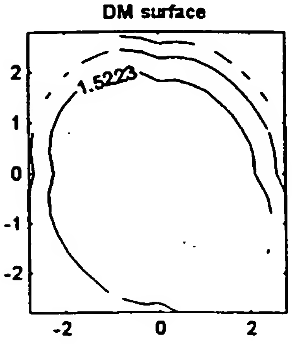


FIG-11E

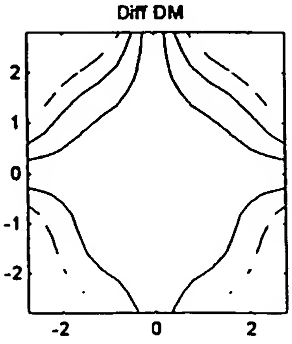


FIG-11F

j	n(ρ)	m(θ)	(C)		Names	Order
0	0	0	(1)	$Z_0 = 1$ $Z_0 = 1$	Piston	Low
1	1	-1	(3)	$Z_1 = \rho \sin\theta$ $Z_1 = y$	Tip	
2	1	1	(2)	$Z_2 = \rho \sin\theta$ $Z_2 = x$	Tilt	
3	2	-2	(5)	$Z_3 = \rho^2 \sin 2\theta$ $Z_3 = 2xy$	Astig-45deg	Medium
4	2	0	(4)	$Z_4 = 2\rho^2 - 1$ $Z_4 = 2(x^2 + y^2) - 1$	Sphere	
5	2	2	(6)	$Z_5 = \rho^2 \sin 2\theta$ $Z_5 = x^2 - y^2$	Astig-Q90deg	
6	3	-3	(9)	$Z_6 = \rho^2 \sin 3\theta$ $Z_6 = y(3x^2 - y^2)$	Coma	
7	3	-1	(7)	$Z_7 = (3\rho 3 - 2\rho)\sin\theta$ $Z_7 = y(3(x^2 + y^2) - 2)$		
8	3	1	(8)	$Z_8 = (3\rho^3 - 2\rho)\cos\theta$ $Z_8 = x(3(x^2 + y^2) - 2)$		
9	3	3	(10)	$Z_9 = \rho^3 \cos 3\theta$ $Z_9 = x(x^2 - 3y^2)$	Coma	
10	4	-4	(15)	$Z_{10} = 4\rho^4 \sin 4\theta$ $Z_{10} = 4xy(x^2 - y^2)$		
11	4	-2	(13)	$Z_{11} = (4\rho^4 - 3\rho^2)\sin 2\theta$ $Z_{11} = 2xy(4(x^2 + y^2) - 3)$		
12	4	0	(11)	$Z_{12} = 6\rho^4 - 6\rho^2 + 1$ $Z_{11} = 1 + 6[(x^2 + y^2)^2 - (x^2 + y^2)]$	Spher Aberration	
13	4	2	(12)	$Z_{13} = (4\rho^4 - 3\rho^2)\cos 2\theta$ $Z_{13} = 4(x^4 - y^4) - 3(x^2 - y^2)$		
14	4	4	(14)	$Z_{14} = 4\rho^4 4\cos 4\theta$ $Z_{14} = x^4 + y^4 - 6x^2 y^2$		

Fig. 12

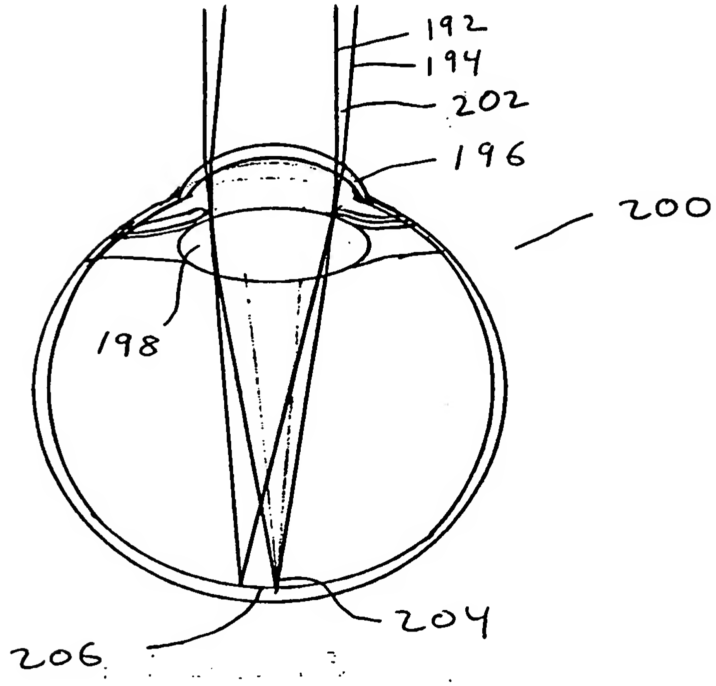

192
194
202
196
200
198
204
206

FIG_13

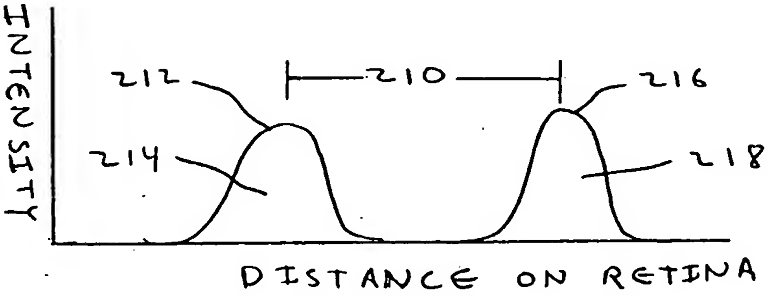

INTENSITY
212
210
216
214
218
DISTANCE ON RETINA

FIG_14

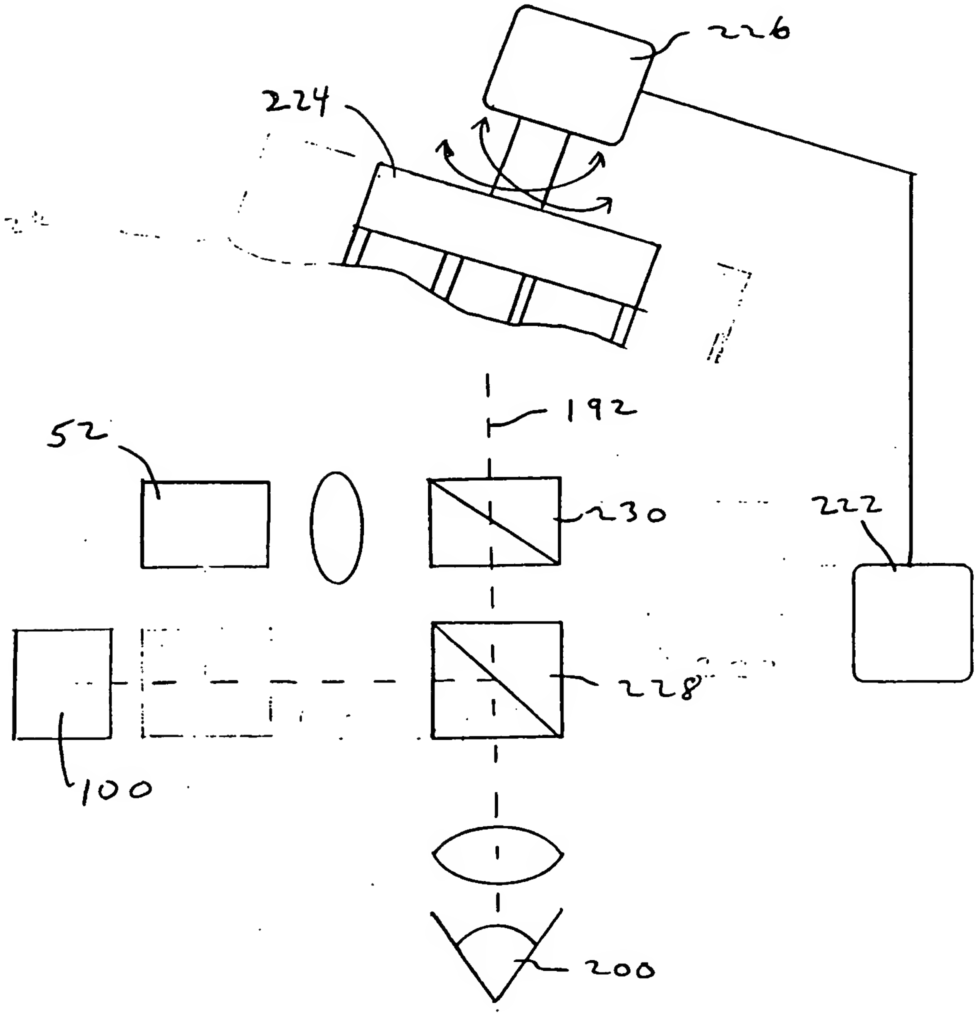


FIG – 15

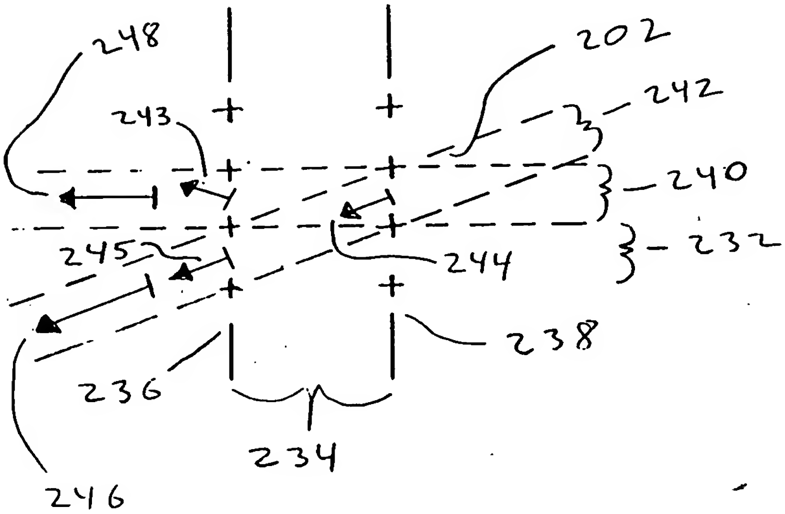


FIG_15A

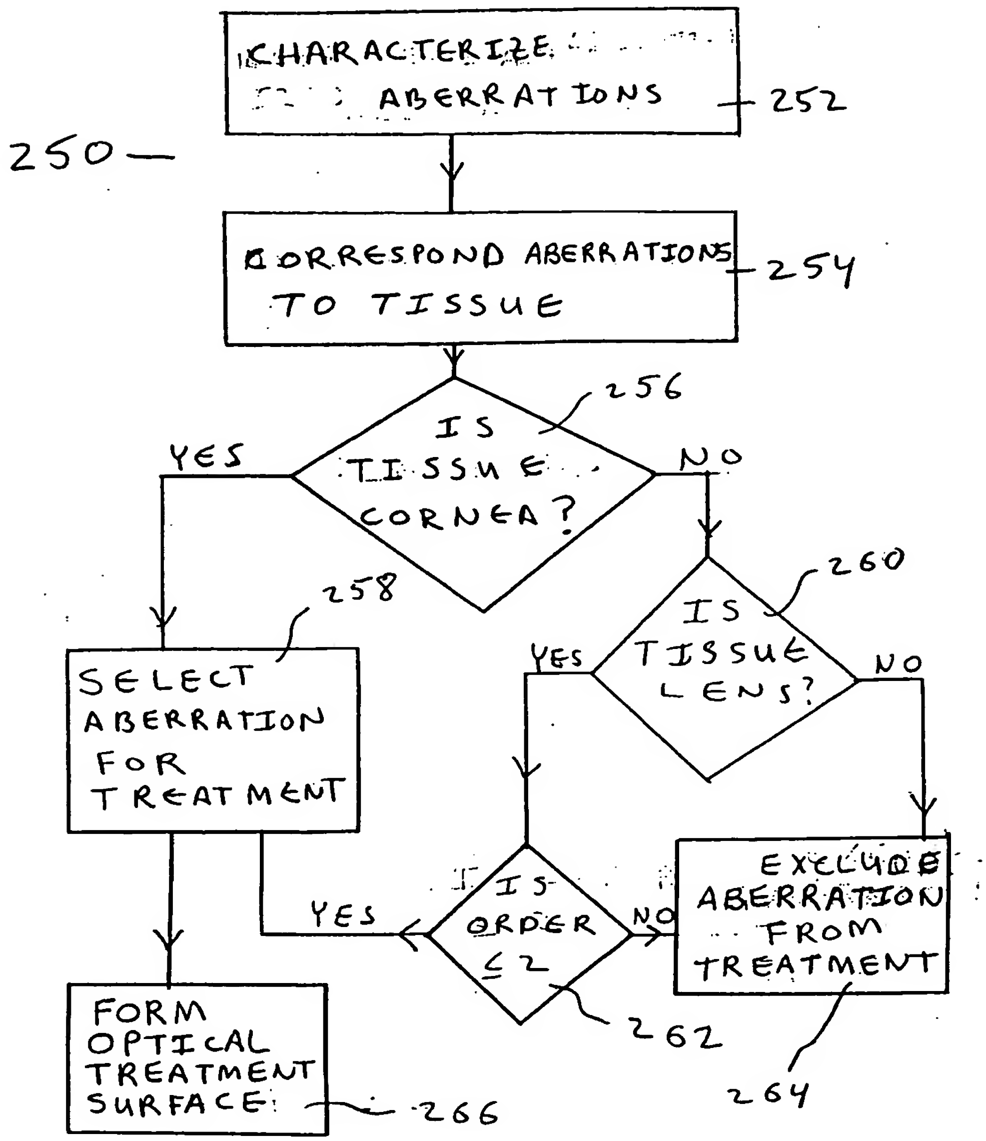

CHARACTERIZE
ABERRATIONS
252
250
CORRESPOND ABERRATIONS TO TISSUE
254
IS TISSUE CORNEA?
256
YES
NO
IS TISSUE LENS?
260
258
SELECT ABERRATION FOR TREATMENT
YES
NO
IS ORDER ≤ 2
YES
NO
262
EXCLUDE ABERRATION FROM TREATMENT
264
FORM OPTICAL TREATMENT SURFACE
266

FIG_16